

ART. VII.—*The Sugar Strength and Acidity of Victorian Musts, with Reference to the Alcoholic Strength of Victorian Wines.*

PART II.

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The present, being the second part of an enquiry into the sugar strength and acidity of Victorian musts, is the third part of a general investigation of Victorian wines—the first part of which related solely to the alcoholic strength of Victorian and other Australian wines. In the first part it was shown from the determination of the alcoholic strength of some 600 Australian Wines (*Journal of the Board of Viticulture for Victoria*, May 1892, pp. 81-96), that the average strength of Australian wines is 12 grammes of absolute alcohol per 100 cubic centimetres, as compared to an average of 8 grms. per 100 c.c. characteristic of French and German wines (nearly 2000 samples). In the second part, which was communicated to the Chemical Section of the Aust. Assoc. for Ad. Science, Adelaide, 1893, the investigation of the musts was taken up with a view to ascertaining in the first place whether the sugar strength of Victorian musts was great enough to account for the high alcoholic strength of Victorian (and all Australian) wines, and also to determine how the acidity of Victorian musts compared with those of France and Germany. In the present third part the results of the determinations of sugar strength and acidity of Victorian musts for the Vintage of 1894 are communicated, as it appeared desirable to control the determinations of the vintage of 1893 by a second and more extensive series in a different season and in more widely scattered districts. For the purposes of comparison and completeness the results of 1893 will be reproduced and discussed along with those of 1894.

It was found in the first part that the Victorian wines showed, on the average, an alcoholic strength half as large again as that

of the average French and German wines, for which elaborate data have been published by various French Chemists (Fauré, *Analyse chimique et comparée des Vins de la Gironde*; Gayon, Blarez, and Dubourg, *Analyse chimique des Vins de la Gironde*, 1888; Portes and Ruyssen, *Traité de la Vigne et de ses Produits*, 1886; *Documents du Laboratoire Municipal*; and analyses by Houdart, Girard, and others given in Viard's *Traité Général de la Vigne et des Vins*, 1892), and the German Imperial Commission for Wine Statistics, appointed in 1884. (*Zeit. für Anal. Chemie.*, 27, *et seq.*)

It was shown in the second part that the sugar strength of Victorian musts corresponds closely with the alcoholic strength of Victorian wines, in other words, that the average Victorian must contains nearly half as much sugar again as the average French and German. The determinations for 1894 bear out this interesting result, and show that, on the whole, the alcoholic strength of Victorian wines is fully accounted for by the high sugar strength of the musts. Some earlier investigations of the sugar strength of Australian musts had been made by the Hunter River Vineyard Association, commencing in 1847; Muspratt, 1857, and Dr. A. C. Kelly, 1867, also the South Australian Royal Commission in 1874, and by H. Lumsdaine, Chief Inspector of Distilleries, New South Wales, in 1875, and had proved the high specific gravity and therefore high sugar strength of Australian musts (for instance the South Australian Royal Commission found an average specific gravity of 1.118 for seventeen samples of grapes, representing 28.4 grammes of sugar per 100 cub. cent.) On account of the limited number of the earlier determinations, these two series of 1893 and 1894 were undertaken by me in order to have data as similar as possible to the systematic statistics being gathered for France and Germany, and especially the latter by the labours of the Imperial German Commission.

In the Victorian vintage of 1893 the number of samples of musts examined was 119, while in the present year it was 196, representing the chief wine-growing areas. Each sample was examined on the vineyard where produced, having been pressed by myself, the specific gravity and acidity of each being then taken immediately; the results of the measurements of specific

gravity and acidity are given for all the samples of 1893 and of 1894 in the tables at the end of this paper.

The specific gravities of the musts are referred to a temperature of 15° C., and water at 15° C.; having been determined by the Glucometre of Dr. Guyot. The specific gravity of a must is chiefly useful for giving an approximate value of its sugar strength, which can be derived most conveniently from the specific gravity by means of a table given by Salleron (*Notice sur les instruments de précision appliqués à l'Oenologie*, 1887), showing the relation between the density and sugar strength of a must, Salleron's allowance being made in that table for the effect of matters in the must other than sugar on the specific gravity. This allowance has been obtained as empirically suitable for French musts, and it remains to be ascertained how far it applies accurately to Australian musts, but for present purposes it must be accurate enough. Salleron's table is reproduced at the end of this paper; it should be noticed that in it the alcohol is expressed as the volume of alcohol in 100 volumes of the resulting spirit, whereas in the present paper the alcohol is always expressed as the weight in grammes in 100 cubic centimetres.

With regard to the measurement of acidity, a normal solution of Sodium hydrate (40 grammes of Na.H.O. per litre of solution) was used, with phenolphthalein as indicator for musts from white grapes, and for coloured musts the natural colouring matter of the must was used as indicator (as suggested by Pasteur).

Before comparing the average sugar strength and acidity of Victorian musts with those of the French and German, it will be as well to give separately the averages for 1893 and 1894, as follows :—

TABLE I.

Year.	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free acids, calc. as Tartaric Acid. Grammes per 100 c.c.	Number of Samples.
1893	1·108	25·8	·72	119
1894	1·098	23·1	·79	196

With these we get the average of all the 315 samples given in the following table, along with the French and German averages :

TABLE II.

	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free acids, calc. as Tartaric Acid. Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
France - -	1·083	19·1	·79	4·13
Germany - -	1·075	17·0	·96	5·65
Victoria - -	1·102	24·2	·76	3·14

It will be seen that although the sugar strength in Victorian musts for 1894 is somewhat lower than in those of 1893, the average strength of Victorian musts is about a third as great again as the French and German averages. The reasons for the slight variation in the Victorian averages for 1893 and 1894 are probably the difference in rainfall, that for 1893 being below, and that for 1894 being above the mean annual value; and the fact that, in order to overtake the greater number of samples of 1894, determinations had to be begun earlier must be borne in mind, as it caused the introduction into the average of a number of samples taken at the earliest stage of the vintage. But under all the conditions it may be said that the two years, 1893 and 1894, taken together have been favourable for giving results which must be close to those that would be obtained by averaging for a number of years.

The most interesting point in connection with the sugar strength of the average Victorian must is the estimation of the amount of alcohol which it can yield in the corresponding wine. According to the chemistry of the alcoholic fermentation of sugar it is allowed that when a solution of sugar is completely fermented the sugar yields almost exactly the half of its own weight of alcohol (strictly 48·6 per cent. see Pasteur, *Ann. de Chimie et de Phys.*, 3rd ser., 58, p. 330). Accordingly, the 24·2 grammes of sugar in 100 c.c. of average Victorian must would,

on complete fermentation, yield 12·1 grammes of alcohol in 100 c.c. of wine, or more accurately 11·7. Now the average alcoholic strength of Victorian wines, as determined by me in the first part of this investigation, was 12 grammes of alcohol per 100 c.c. of wine, a number practically identical with that just calculated from the sugar strength of the average must; so that the high alcoholic strength of Victorian wines finds its explanation in the high sugar strength of Victorian musts.

With regard to acidity, it is shown in the above table that the acidity of our average Victorian must comes very close to that of the French average, but as the sugar is greater, the proportion of acid to sugar is lower than in the French case; to bring out this difference the column headed parts of acid to 100 parts of sugar has been given above, and it shows that the average Victorian must cannot be said to be simply a more concentrated form of the French and German musts, for while it is more concentrated or stronger as regards sugar it is weaker in acid. As to the amount of acid considered desirable in French and German practice, it is stated by Viard (*Traité Général de la Vigne*, 1892, p. 177), that a must ought not to contain less acid than is equivalent to ·7 to ·9 gramme of tartaric acid per 100 c.c. of must; and Fresenius has given a value nearly ·8 gramme of tartaric acid as characteristic of the must in a good year in Germany; this acidity is almost identical with the Victorian average, but to keep in the same proportion to its high sugar strength the Victorian average ought to be nearly 1·1 gramme of acid per 100 c.c.

The most interesting practical question brought out by these numbers is: Given that it is desirable, how far it is possible to bring the average Victorian wine nearer to the French and German standard? It is obvious that the first condition to be complied with is to bring the average Victorian must nearer to those of France and Germany by a reduction of the sugar strength and an increase of the acidity. That this is possible is proved completely by several individual instances in the tables at the end of this paper; some of which, for convenience, are selected and given separately in the following small table:

TABLE III.

District Number.	District.	Variety.	Specific Gravity, 15°/15°C.	Sugar, Grammes per 100 c.c.	Free Acids, calc. as Tartaric Acid Grammes per 100 c.c.	Ratio of Acid to 100 parts Sugar.
1	Tabilk	Carbenet Sauvignon -	1.104	24.7	1.03	4.19
6	"	Baxter Sherry -	1.094	22.0	1.03	4.71
8	"	Verdeilho -	1.112	26.8	1.11	4.16
14	"	Mataro -	1.073	16.4	1.59	9.73
2	Barnawartha -	Malbeck -	1.088	20.4	1.08	5.30
7	"	Malbeck -	1.039	23.4	1.01	4.31
9	"	Carbenet Sauvignon -	1.100	23.6	1.01	4.28
13	"	Mataro -	1.084	19.4	1.08	5.56
14	"	Malbeck -	1.096	22.6	1.01	4.46
15	"	Carbenet Sauvignon -	1.093	21.8	1.01	4.63
24	"	Riesling -	1.095	22.3	1.01	4.52
6	Great Western	Mataro -	1.078	17.8	1.14	6.41
10	"	Riesling -	1.095	22.3	1.00	4.48
11	"	Tokay -	1.087	20.2	1.07	5.30
12	"	Gonais -	1.089	20.7	1.21	5.86
7	Yering	Carbenet Sauvignon -	1.090	21.0	1.00	4.76
10	"	Riesling -	1.090	21.0	1.14	5.44
11	Dookie	Riesling -	1.097	22.8	1.01	4.43
13	"	Baxter Sherry -	1.081	18.6	.86	4.65
5	Yackandandah	Riesling -	1.082	18.8	.86	4.61
21	"	White Hermitage -	1.084	19.4	.86	4.47

Some of these are practically identical with the average of French and German musts, and others while stronger in sugar are also stronger in acid, so that the proportion of the two is the same as in the French and German. The question of securing a reduction in sugar strength and an increase in acidity in Victorian musts is connected with another of even greater importance to the Victorian wine growers, namely that of maintaining an approximately constant standard from year to year. In many of the vineyards no accurate scientific methods are used for determining the date of the vintage, the vigneron relying entirely on his own impression as to the fitness of the grapes for gathering; where the experience and judgment are great it is possible that the general impressions of the vigneron may be sufficient to guarantee a practically constant standard of must, but in the general case it would be a great assistance to the vigneron to have measurements taken from day to day of the sugar and acid in the grapes at the approach of the vintage, so that he could start gathering when the quantities were identical with those of some year in which he had obtained his best results. In this way he could secure, at least, the initial conditions for reproducing a wine like his best; of course much depends on the subsequent treatment of the must, but it is impossible that the same treatment, however careful, can give the same results from different musts. The measurements to be made are really simple, many vignerons at present determining the sugar for themselves, and a few both sugar and acids; it is only necessary that the practice of the latter should become more common to produce a greater uniformity in the main ingredients of the wines.

Although there is no doubt that recent researches have proved the powerful influence of the yeast (levure) in determining the character and quality of a wine, and also the importance of the temperature of fermentation, it still remains a fact that the fundamental properties of the wine depend upon the yeasts (levures) having the right material to work on, and it follows that the reasonable course for the vigneron to adopt is to get his must uniform as regards the two main constituents—sugar and acid—as he can easily do. It is evident that different standards will be necessary for different varieties of grapes, but the essential point is that of keeping

scientifically to the standard that has been found best. The same principles that apply to keeping a must uniform from year to year also apply to experiments in varying musts towards the French and German standards, and, as has been already remarked, many vigneronns have prepared musts practically identical with those in sugar and acid. It is now assumed amongst the scientific authorities on wine-making that one function of the acids is to contribute to the formation of those ethers (esters) which constitute the bouquet.

Hitherto only the average must of the whole of Victoria has been under discussion, but interest also attaches to a comparison of the variations of the average must in different parts of the country. In the following table are given the averages for the different districts from the individual determinations in Table V. at the end of this paper.

TABLE IV.
VICTORIAN VINTAGE 1893.

MEAN DISTRICT RESULTS.

District.	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free acids, calculated as Tartaric Acid. Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
Echuca - - -	1·110	26·3	·72	2·72
Tabilk - - -	1·100	23·6	·75	3·18
Barnawartha - -	1·111	26·6	·66	2·46
Yackandandah - -	1·115	27·6	·67	2·42
Beechworth - -	1·104	24·7	·80	3·24

VINTAGE 1894.

Echuca - - -	1·101	23·9	·64	2·70
Tabilk - - -	1·096	22·6	·86	3·83
Barnawatha - -	1·097	22·8	·82	3·61
Wahgunyah - -	1·102	24·2	·74	3·07
Dookie - - -	1·100	23·6	·75	3·20
Yackandandah - -	1·105	25·0	·71	2·86
Great Western - -	1·091	21·2	·90	4·27
Yering - - -	1·093	21·8	·87	4·01

Taking the results for 1894 as covering a larger area, we see that while the actual variation in sugar strength from one district to another is not great, yet the variation in the proportion of acids to sugar is considerable, but even in the sugar strengths there are variations of some importance; these might appear to be due to climatic influence, but I incline to think that differences in practice in the different districts would account largely for such variations as exist; this table shows again what was shown more fully in Table III., that it is possible to exercise a powerful control over the composition of musts.

The collection of the data of this paper for 1894 would have been impossible but for the assistance and hospitality extended to me by the owners and managers of the different vineyards, to whom I beg to offer my heartiest thanks, as also to the Premier, the Hon. J. B. Patterson, for practical encouragement in the work.

In the following Tables, V., VI., pp. 98 to 115, it must be remembered that the Sugar in grammes per 100 cubic centimetres is derived from the specific gravity according to Table VII., pp. 116 and 117, due to Salleron.

TABLE V.

VICTORIAN MUSTS.—VINTAGE 1894.

NORTHERN GOULBURN VALLEY.—ECHUCA DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free Acids, Tartaric Acid. Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Tongala	Hermitage	Feb. 24	1.131	31.9	.72	2.26
2	"	Hermitage	"	1.104	24.7	.72	2.91
3	"	Hermitage	"	1.101	23.9	.72	3.01
4	"	Glory of Australia	"	1.095	22.3	.79	3.55
5	"	Dongelhino	"	1.102	24.2	.57	2.38
6	"	Black Hambro'	"	1.099	23.4	.43	1.84
7	"	Carbenet Sauvignon	"	1.100	23.6	.57	2.14
8	"	Trebbiano	"	1.092	21.5	.61	3.01
9	"	Verdeilho	"	1.110	26.3	.79	3.01
10	"	Pedro Ximenes	"	1.101	23.9	.72	3.36
11	"	Gouais	Feb. 26	1.100	23.6	.79	1.66
12	"	Terret (O-villade)	"	1.109	26.0	.43	3.30
13	"	Riesling	"	1.094	22.0	.72	2.30
14	"	Grenache	"	1.103	24.4	.57	2.46
15	"	Malbeck	"	1.099	23.4	.57	

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15°C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
16	Tongala	Mataro	Feb. 26	1·101	23·9	·57	2·41
17	"	Burgundy	Feb. 28	1·112	26·8	·50	1·88
18	Daracombe	Mataro	27	1·104	24·7	·50	2·04
19	"	Hermitage	"	1·120	29·0	·57	1·98
20	Eureka	Doradillo	"	1·087	20·2	·50	2·50
21	"	Hermitage	"	1·102	24·2	·64	2·65
22	"	Terret (Oeillade)	"	1·087	20·2	·50	2·50
23	"	Riesling	"	1·086	19·9	·79	3·98
24	Newcombe	Hermitage	Feb. 28	1·106	25·2	·72	2·86
25	"	Mataro	"	1·084	19·4	·79	4·08
26	"	Riesling	"	1·094	22·0	·86	3·93
27	St. Helena	Pedro Ximenes	"	1·106	25·2	·64	2·57
28	"	Terret (Oeillade)	"	1·114	27·4	·57	2·10
29	"	Mataro	"	1·107	25·5	·50	1·98
30	"	Hermitage	"	1·107	25·5	·72	2·82
31	"	Riesling	"	1·099	23·4	·79	3·38
			Mean -	1·101	23·9	·64	2·70
			Max. -	1·131	31·9	·79	4·08
			Min. -	1·084	19·4	·43	1·66

SOUTHERN GOULBURN VALLEY.—TABILK DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15°C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Château Tabilk	Carbenet Sauvignon	March 27	1.104	24.7	1.03	4.19
2	"	Chasselas	"	1.095	22.3	.47	2.14
3	"	Mataro	"	1.094	22.0	.71	3.26
4	"	Hermitage	"	1.108	25.8	.79	3.09
5	"	White Hermitage	"	1.103	24.4	.87	3.59
6	"	Baxter Sherry	"	1.094	22.0	1.03	4.71
7	"	Riesling	"	1.091	21.2	.71	3.38
8	Goulburn Valley	Verdeilho	"	1.112	26.8	1.11	4.16
9	"	Carbenet Sauvignon	"	1.093	21.8	.87	4.02
10	"	Pineau blanc	"	1.091	21.2	.79	3.76
11	"	Chasselas	"	1.107	25.5	.55	2.18
12	"	Riesling	"	1.090	21.0	.95	4.56
13	"	Doradillo	"	1.090	21.0	.55	2.66
14	"	Mataro	"	1.073	16.4	1.59	9.73
			Mean	1.096	22.6	.86	3.83
			Max.	1.112	26.8	1.59	9.73
			Min.	1.073	16.4	.47	2.14

WAHGUNYAH DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	All Saints	-	March 26	1.098	23.1	.79	3.45
2	"	Hermitage	"	1.090	21.0	.71	3.42
3	"	Gouais	"	1.110	26.3	.79	3.03
4	"	Pedro Ximenes	"	1.100	23.6	.55	2.36
5	"	Ancarot	"	1.115	27.6	.79	2.89
6	"	Verdelho	"	1.106	25.2	.71	2.84
7	"	Malbeck	"	1.097	22.8	.71	3.14
8	"	Riesling	"	1.093	21.8	.79	3.66
9	"	Grenache	"	1.113	27.1	.71	2.64
10	"	Tokay	"	1.095	22.3	.55	2.50
11	"	Chasselas	"	1.100	23.6	.79	3.38
12	"	Carbenet Sauvignon	"	1.112	20.8	.95	3.57
		Brown Muscat	"				
		Mean	-	1.102	24.2	.74	3.07
		Max.	-	1.115	27.6	.95	3.66
		Min.	-	1.090	21.0	.55	2.50

BARNAWARTHA DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15°C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Bordeaux	Brown Muscat	March	1.093	21.8	.79	3.64
2	"	Malbeck	"	1.088	20.4	1.08	5.30
3	Barnawartha	Brown Muscat	"	1.106	25.2	.79	3.14
4	"	Grenache	"	1.100	23.6	.86	3.66
5	"	Riesling	"	1.095	22.3	.93	4.20
6	"	Verdelho	"	1.114	27.4	.93	3.42
7	"	Malbeck	"	1.099	23.4	1.01	4.31
8	"	Hermitage	"	1.091	21.2	.86	4.08
9	"	Carbenet Sauvignon	"	1.100	23.6	1.01	4.28
10	"	Aucarot	"	1.112	26.8	.86	3.22
11	Burrabunna	Hermitage	March	1.087	20.2	.93	4.63
12	"	Brown Muscat	"	1.096	22.6	.64	2.87
13	"	Mataro	"	1.084	19.4	1.08	5.56
14	"	Malbeck	"	1.096	22.6	1.01	4.46
15	"	Carbenet Sauvignon	"	1.093	21.8	1.01	4.63
16	Rocky Point	Brown Muscat	March	1.082	18.8	.79	4.21
17	"	Chasselas	"	1.095	22.3	.50	2.26
18	"	Malbeck	"	1.101	23.9	.86	3.61
19	"	Riesling	"	1.096	22.6	.93	4.14

BARNAWARTHA DISTRICT—(Continued).

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
20	Rocky Point	Pineau blanc	March 11	1·107	25·5	·64	2·54
21	"	Gonais	"	1·083	19·1	·93	4·90
22	"	White Hermitage	"	1·083	19·1	·93	4·90
23	"	Hermitage	"	1·101	23·9	·79	3·31
24	Koonidda	Riesling	"	1·095	22·3	1·01	4·52
25	"	Malbeck	"	1·106	25·2	·86	3·43
26	"	Hermitage	"	1·106	25·2	·72	2·86
27	"	Brown Muscat	"	1·103	24·4	·86	3·54
28	Fassifern	Malaga	"	1·088	20·4	·57	2·82
29	"	Gordo Blanco	"	1·121	29·2	·43	1·47
30	Somerset	Chasselas	"	1·085	19·6	·57	2·93
31	"	Malbeck	"	1·107	25·5	·72	2·82
32	"	Hermitage	"	1·105	25·0	·64	2·59
33	"	Riesling	"	1·100	23·6	·72	3·05
			Mean	1·097	22·8	·82	3·61
			Max.	1·121	29·2	1·08	5·56
			Min.	1·082	18·8	·43	1·47

YACKANDANDAH DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid. Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Melville	Auaret	April 7	1.115	27.6	.71	2.57
2	"	Brown Muscat	"	1.122	29.5	.71	2.40
3	"	Burgundy	"	1.124	30.0	.78	2.93
4	"	Verdeilho	"	1.124	30.0	.71	2.36
5	Riddington	Riesling	"	1.082	18.8	.86	4.61
6	"	Brown Muscat	"	1.105	25.0	.78	3.15
7	"	Madeira	April 8	1.084	19.4	.55	2.85
8	"	Pineau gris	"	1.107	25.5	.55	2.16
9	"	Burgundy	"	1.102	24.2	.78	3.26
10	"	Hermitage	"	1.099	23.4	.55	2.36
11	Staghorn	Brown Muscat	"	1.108	25.8	.63	2.44
12	"	Hermitage	"	1.108	25.8	.71	2.75
13	"	Verdeilho	"	1.115	27.6	.86	3.14
14	Westmoreland	Burgundy	"	1.111	26.6	.71	2.67
15	"	Verdeilho	"	1.123	29.8	.63	2.11
16	"	Hermitage	"	1.101	23.9	.71	2.97
17	"	Brown Muscat	"	1.114	27.4	.63	2.30
18	"	Riesling	"	1.101	23.9	.63	2.64
19	Ivyton	Hermitage	"	1.119	28.7	.71	2.47
20	"	Reisling	"	1.088	20.4	.86	4.26
21	Balmoral	White Hermitage	"	1.084	19.4	.86	4.47
22	"	Mataro	"	1.090	21.0	.71	3.40
23	"	Malbeck	"	1.104	24.7	.86	3.51
24	"	Hermitage	"	1.101	23.9	.63	2.64
Mean -				1.105	25.0	.71	2.86
Max. -				1.124	30.0	.86	4.61
Min. -				1.082	18.8	.55	2.11

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Great Western	Hermitage -	March 17	1·097	22·8	·92	4·07
2	"	Carbenet Sauvignon -	"	1·095	22·3	·71	3·20
3	"	Malbeck -	"	1·092	21·5	·85	4·00
4	"	Pineau noir -	"	1·099	23·4	1·00	4·27
5	"	Burgundy -	"	1·087	20·2	·85	4·24
6	"	Mataro -	"	1·078	17·8	1·14	6·41
7	"	Espart -	"	1·084	19·4	1·00	5·15
8	"	Red Frontignac -	"	1·096	22·6	1·00	4·42
9	"	Pineau blanc -	"	1·095	22·3	·71	3·20
10	"	Riesling -	"	1·095	22·3	1·00	4·48
11	"	Tokay -	"	1·087	20·2	1·07	5·30
12	"	Gouais -	"	1·089	20·7	1·21	5·86
13	"	Sweetwater -	"	1·083	19·1	·71	3·73
14	"	Chasselas -	"	1·081	18·6	·64	3·45
15	"	White Frontignac -	"	1·087	20·2	1·21	6·00
16	"	Black Prince -	"	1·089	20·7	·78	3·79
17	"	Pedro Ximenes -	"	1·090	21·0	·92	4·12
18	"	Muscat of Alexandria -	"	1·079	18·0	·78	4·35
19	St. Ethels	Mataro -	March 18	1·102	24·2	·85	3·45
20	"	Grenache -	"	1·102	24·2	·92	3·83
21	"	Burgundy -	"	1·101	23·9	·85	3·60
22	"	Malbeck -	"	1·083	19·1	·92	4·85
23	"	Hermitage -	"	1·102	24·2	1·00	4·13
24	"	Chasselas -	"	1·099	23·4	·64	2·74
Mean -				1·091	21·2	·90	4·27
Max. -				1·102	24·2	1·21	6·41
Min. -				1·078	17·8	·64	3·20

DOOKIE DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Fairburn Grange	Black Hambro'	March 7	1.096	22.6	.86	3.82
2	"	Pedro Ximenes	"	1.098	23.1	.93	4.05
3	"	Black Prince	"	1.093	21.8	1.01	4.63
4	"	Chasselas	"	1.096	22.6	.50	2.23
5	"	Carbenet Sauvignon	"	1.105	25.0	.86	3.46
6	"	Baxter Sherry	"	1.088	20.4	.79	3.88
7	"	Hermitage	"	1.099	23.4	.79	3.38
8	"	Gordo Blanco	"	1.094	22.0	.79	3.60
9	"	Gonais	"	1.092	21.5	.79	3.68
10	"	Hermitage	"	1.105	25.0	.79	3.17
11	"	Riesling	"	1.097	22.8	1.01	4.43
12	"	Gordo Blanco	March 13	1.089	20.7	.57	2.78
13	"	Baxter Sherry	"	1.081	18.6	.86	4.65
14	"	Hermitage	"	1.112	26.8	.79	2.95
15	"	Riesling	"	1.104	24.7	.86	3.50
16	"	Black Hambro'	"	1.091	21.2	.86	4.22
17	"	Carbenet Sauvignon	"	1.106	25.2	1.01	4.00
18	"	Gordo Blanco	"	1.109	26.0	.64	2.49
19	"	Riesling	"	1.109	26.0	.79	3.05
20	"	Pedro Ximenes	"	1.111	26.6	.79	3.00
21	"	Gonais	"	1.112	26.8	.64	2.41
22	"	Black Prince	"	1.098	23.1	.86	3.74
23	Koinburra	Malaga	March 14	1.102	24.2	.86	1.48
24	"	Gordo Blanco	"	1.099	23.4	.57	2.46
25	"	Black Hambro'	"	1.075	17.0	.64	3.81

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
26	Koimburra	Black Prince	March 14	1·086	19·9	·79	4·00
27	"	Black St. Peter	"	1·090	21·0	·79	3·77
28	"	Baxter Sherry	"	1·086	19·9	·79	4·00
29	Dookie College	Gordo Blanco	"	1·096	22·6	·57	2·54
30	"	Carbenet Sauvignon	"	1·116	27·9	·79	2·84
31	"	Hermitage	"	1·130	31·6	·64	2·05
32	Château Dookie	Shepherd's Riesling	"	1·110	26·3	·64	2·47
33	"	Mafaro	"	1·106	25·2	·86	3·43
34	"	Gouais	"	1·097	22·8	·86	3·78
35	"	Pedro Ximenes	"	1·109	26·0	·64	2·49
36	"	Hermitage	"	1·117	28·2	·72	2·55
37	"	Chasselas	"	1·103	24·4	·50	2·07
38	"	Tokay	"	1·101	23·9	·64	2·71
39	"	White Hermitage	"	1·096	22·6	·79	3·51
40	Stoneleigh	Carbenet Sauvignon	"	1·108	25·8	·79	3·07
41	"	White Hermitage	"	1·110	26·3	·57	2·20
42	"	Malbeck	"	1·103	24·4	·72	2·95
43	"	Riesling	"	1·100	23·6	·79	3·36
		Mean	-	1·100	23·6	·75	3·20
		Max.	-	1·130	31·6	1·01	4·63
		Min.	-	1·075	17·0	·36	1·48

YERING DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Yering	Hermitage -	March 22	1.090	21.0	.85	4.08
2	"	Merlot -	"	1.092	21.5	1.28	5.95
3	"	White Hermitage -	"	1.101	23.9	.78	3.28
4	"	Mataro -	"	1.085	19.6	.92	4.73
5	"	Pineau blanc -	"	1.095	22.3	.78	3.52
6	"	Pineau gris -	"	1.104	24.7	.71	2.87
7	"	Carbenet Sauvignon -	"	1.090	21.0	1.00	4.76
8	"	Malbeck -	"	1.095	22.3	.85	3.84
9	"	Gouais -	"	1.077	17.5	1.07	6.12
10	"	Riesling -	"	1.090	21.0	1.14	5.44
11	St. Huberts	Hermitage -	"	1.101	23.9	.78	3.28
12	"	Carbenet Sauvignon -	"	1.092	21.5	.78	3.65
13	"	Chasselas -	"	1.088	20.4	.57	2.80
14	"	White Hermitage -	"	1.098	23.1	.64	2.78
15	"	Riesling -	"	1.100	23.6	.92	3.93
			Mean -	1.093	21.8	.87	4.01
			Max -	1.104	24.7	1.28	5.95
			Min. -	1.077	17.5	.57	2.78

TABLE VI.

VINTAGE 1893.

NORTHERN GOULBURN VALLEY.—ECHUCA DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15°C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Tongala	Muscate Red -	March 9	1·124	30·0	·34	1·13
2	"	Muscate Red -	" 12	1·160	39·0	·70	1·80
3	"	Burgundy -	" 9	1·125	30·3	·76	2·50
4	"	Burgundy -	" 10	1·113	27·1	·75	2·77
5	"	Burgundy -	" 11	1·144	35·4	1·12	3·16
6	"	Burgundy -	" 11	1·140	34·3	·76	2·22
7	"	Pedro Ximenes	" 10	1·093	21·8	·82	3·76
8	"	Verdeilho -	" 10	1·108	25·8	·86	3·33
9	"	Terret Oeillade	" 10	1·096	22·6	·76	3·36
10	"	Riesling -	" 11	1·092	21·5	·82	3·81
11	"	Riesling -	" 14	1·096	22·6	·76	3·36
12	"	Riesling -	" 17	1·101	23·9	·75	3·14
13	"	Carbenet Sauvignon	" 12	1·117	28·2	·75	2·66
14	"	Hermitage -	" 12	1·124	30·0	·82	2·73
15	"	Dongelluno -	" 12	1·116	27·9	·86	3·08
16	"	Black St. Peter	" 12	1·088	20·4	·60	2·94
17	"	Unknown	" 12	1·116	27·9	·75	2·68
18	"	Malbeck	" 13	1·112	26·8	·75	2·77
19	"	Carignane	" "	1·094	22·0	·62	2·82
20	"	Unknown	" "	1·133	32·4	·80	2·47
21	"	Chasselas	" "	1·107	25·5	·45	1·76

NORTHERN GOULBURN VALLEY.—ECHUCA DISTRICT—(Continued).

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
22	Tongala	Terret & Hermitage -	March 13	1·114	27·4	·62	2·26
23	"	Black Prince -	"	1·096	22·6	·75	3·32
24	"	Grenache -	March 15	1·120	29·0	·76	2·62
25	"	Doradillo -	"	1·094	22·0	·41	1·87
26	"	Sultana -	"	1·120	29·0	·62	2·14
27	"	Sweet-water -	"	1·100	23·6	·75	3·17
28	"	Trebbiano -	"	1·114	27·4	·65	2·37
29	"	Mataro & Hermitage -	"	1·117	28·2	·62	2·20
30	Daracombe	Mataro -	March 16	1·096	22·6	1·12	4·95
31	Killarney	Mataro -	" 10	1·106	25·2	·62	2·46
32	"	Hermitage -	" 11	1·107	25·5	·76	3·00
33	Newcombe	Hermitage -	" 15	1·123	29·8	·76	2·55
34	"	Riesling -	" 17	1·100	23·6	·65	2·80
35	St. Helena	Hermitage -	" 15	1·116	27·9	·65	2·30
36	"	Morellion -	" 17	1·080	18·3	·75	4·10
37	"	Terret -	"	1·116	27·9	·55	2·00
38	"	Black Prince -	"	1·090	21·0	·62	3·00
39	"	Mataro -	"	1·130	31·6	·62	1·96
40	"	Black St. Peter -	"	1·084	19·4	·76	3·91
41	Eureka	Terret -	March 18	1·100	23·6	·75	3·18
Mean -				1·110	26·3	·72	2·72
Max. -				1·160	39·0	1·12	4·95
Min. -				1·080	18·3	·34	1·13

Sugar Strength and Acidity of Victorian Musts.

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Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid. Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Château Tabilk	White Hermitage	April 8	1.109	26.0	.75	2.90
2	"	Riesling	"	1.095	22.3	.90	4.03
3	"	Gouais	"	1.091	21.2	.82	3.86
4	"	Hermitage	"	1.100	23.6	.92	3.90
5	"	Black Prince	"	1.081	18.6	.62	3.33
6	"	Pedro Ximenes	"	1.074	16.7	.45	2.70
7	Goulburn Valley	Doradillo	"	1.065	14.3	.48	3.35
8	"	Chasselas	"	1.100	23.6	.52	2.20
9	"	Verdeilho	"	1.116	27.9	.85	3.05
10	"	Hermitage	"	1.116	27.9	.82	2.93
11	"	Mataro	"	1.103	24.4	.85	3.48
12	"	Black Hambro'	"	1.130	31.6	.92	2.90
13	"	Muscat	"	1.150	37.0	.95	2.57
14	Cameron's	Burgundy	April 9	1.107	25.5	.92	3.60
15	"	Muscadel, white	"	1.095	22.3	.75	3.36
16	"	Muscadel, brown	"	1.088	20.4	.85	4.16
17	"	Mataro	"	1.099	23.4	.65	2.77
18	"	Hermitage	"	1.122	29.5	.75	2.54
19	"	Black Hambro'	"	1.101	23.9	.88	3.68
20	"	Black Prince	"	1.092	21.5	.68	3.16
21	"	Riesling	"	1.101	23.9	.75	3.14
22	"	Chasselas	"	1.092	21.5	.55	2.56
23	"	Pedro Ximenes	"	1.091	21.2	.55	2.60
24	"	Baxter Sherry	"	1.094	22.0	.82	3.73
		Mean	-	1.100	23.6	.75	3.18
		Max.	-	1.150	37.0	.95	4.16
		Min.	-	1.074	16.7	.45	2.20

BARNAWARTHA DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid. Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Bordeaux	-	March 27	1.104	24.7	.75	3.03
2	"	-	"	1.109	26.0	.92	3.54
3	Fairview	-	"	1.158	38.6	.72	1.86
4	"	-	"	1.117	28.2	.58	2.05
5	Mundadda	-	March 28	1.112	26.8	.50	1.86
6	"	-	"	1.100	23.6	.58	2.45
7	"	-	"	1.112	26.8	.56	2.10
8	"	White Hermitage	"	1.086	19.9	.53	2.66
9	"	Baxter Sherry	"	1.104	24.7	.53	2.14
10	"	-	"	1.123	29.8	.73	2.45
11	"	-	"	1.106	25.2	.67	2.65
12	"	-	"	1.103	24.4	.67	2.74
13	Wakefield	-	"	1.112	26.8	.73	2.72
14	"	-	"	1.126	30.6	.80	2.61
15	Somerset	-	"	1.116	27.9	.70	2.51
16	"	-	"	1.101	23.9	.61	2.55
17	"	-	"	1.092	21.5	.53	2.46
18	Barnawartha	-	March 29	1.100	23.6	.45	1.90
19	"	-	"	1.091	21.2	.61	2.88
20	"	-	"	1.083	19.1	.41	2.14

BARNAWARTHA DISTRICT—(Continued).

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Frec Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
21	Barnawartha	Malbeck	March	1·121	29·2	·70	2·40
22	"	Muscat	"	1·150	37·0	·83	2·24
23	"	Isabella	"	1·102	24·2	·58	2·40
24	"	White Hermitage	"	1·102	24·2	·70	2·90
25	"	Ancarot	"	1·130	31·6	·70	2·21
26	"	Verdeilho	"	1·123	29·8	·75	2·51
27	"	Hermitage	"	1·132	32·2	·77	2·40
28	"	Riesling	"	1·111	26·6	·70	2·63
29	"	Grenache	"	1·100	23·6	·70	2·96
30	"	Mataro	"	1·101	23·9	·66	2·76
		Mean	-	1·111	26·6	·65	2·46
		Max.	-	1·158	38·6	·92	3·54
		Min.	-	1·083	19·1	·41	1·86

YACKANDANDAH DISTRICT.

Progressive Number.	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar, Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid, Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	Hadley Bros.	Riesling	March 30	1.092	21.5	.84	3.92
2	"	Hermitage	"	1.102	24.2	.71	2.93
3	Staghorn	Burgundy	"	1.132	32.2	.80	2.48
4	"	Muscat	"	1.136	33.2	.61	1.83
5	"	Verdeilho	"	1.125	30.3	.71	2.34
6	"	Tokay	"	1.109	26.0	.60	2.31
7	"	Riesling	"	1.096	22.6	.70	3.10
8	"	Hermitage	"	1.114	27.4	.71	2.61
9	Melville	Burgundy	"	1.136	33.2	.70	2.17
10	"	Madeira	"	1.087	20.2	.51	2.52
11	"	Riesling	"	1.101	23.9	.65	2.71
12	"	Verdeilho	"	1.126	30.6	.70	2.28
13	"	Hermitage	"	1.114	27.4	.65	2.37
14	"	Aucarot	"	1.121	29.2	.71	2.43
15	"	Muscat	"	1.130	31.6	.71	2.25
16	Westmoreland	Riesling	"	1.105	25.0	.60	2.40
17	"	Muscat	"	1.123	29.8	.60	2.01
18	"	Burgundy	"	1.124	30.0	.65	2.17
19	"	Verdeilho	"	1.126	30.6	.65	2.12
20	"	Hermitage	"	1.107	25.5	.60	2.34
		Mean	-	1.115	27.6	.67	2.42
		Max.	-	1.136	33.2	.84	3.92
		Min.	-	1.087	20.2	.51	1.83

BEECHWORTH.

Progressive Number	Name of Vineyard.	Variety of Grape.	Date of Examination.	Specific Gravity, 15°/15° C.	Sugar. Grammes per 100 c.c.	Free Acids, calculated as Tartaric Acid. Grammes per 100 c.c.	Parts of Acid to 100 parts Sugar.
1	O'Connor's	-	March 30	1.101	23.9	.73	3.05
2	"	Hermitage (6 yrs. old)	"	1.100	23.6	.70	2.96
3	"	Hermitage (26 yrs. old)	"	1.108	25.8	.92	3.56
4	"	Verdeilho (6 yrs. old)	"	1.107	25.5	.88	3.45
		Verdeilho (26 yrs. old)	"				
			Mean -	1.104	24.7	.80	3.24

TABLE VII.

Showing the relation between density and degrees Baumé; with the Sugar corresponding in grammes per 100 cubic centimetres of Must, according to Salleron, *Notice sur les Instruments de précision appliqués à l'Oenologie*, 1887.

Density 15°/15° C.	Degrees Baumé.	Grammes of Sugar per 100 c.c. of Must.	Alcohol in Volume.
1050	6.9	10.3	6.0
1051	7.0	10.6	6.2
1052	7.1	10.8	6.3
1053	7.2	11.1	6.5
1054	7.4	11.4	6.7
1055	7.5	11.6	6.8
1056	7.6	11.9	7.0
1057	7.8	12.2	7.2
1058	7.9	12.4	7.3
1059	8.0	12.7	7.5
1060	8.1	13.0	7.6
1061	8.3	13.2	7.8
1062	8.4	13.5	7.9
1063	8.5	13.8	8.1
1064	8.6	14.0	8.2
1065	8.8	14.3	8.4
1066	8.9	14.6	8.6
1067	9.0	14.8	8.7
1068	9.2	15.1	8.9
1069	9.3	15.4	9.0
1070	9.4	15.6	9.2
1071	9.5	15.9	9.3
1072	9.7	16.2	9.5
1073	9.8	16.4	9.6
1074	9.9	16.7	9.8
1075	10.0	17.0	10.0
1076	10.2	17.2	10.1
1077	10.3	17.5	10.3
1078	10.4	17.8	10.5
1079	10.5	18.0	10.6
1080	10.7	18.3	10.8
1081	10.8	18.6	10.9
1082	10.9	18.8	11.0
1083	11.0	19.1	11.2
1084	11.1	19.4	11.4
1085	11.3	19.6	11.5
1086	11.4	19.9	11.7
1087	11.5	20.2	11.9
1088	11.6	20.4	12.0
1089	11.7	20.7	12.2
1090	11.9	21.0	12.3
1091	12.0	21.2	12.5
1092	12.1	21.5	12.6
1093	12.3	21.8	12.8
1094	12.4	22.0	12.9
1095	12.5	22.3	13.1
1096	12.6	22.6	13.3
1097	12.7	22.8	13.4
1098	12.9	23.1	13.6

TABLE VII. (*Continued*).

Density 15°/15° C.	Degrees Baumé.	Grammes of Sugar per 100 c c. of Must.	Alcohol in Volume.
1099	13.0	23.4	13.8
1100	13.1	23.6	13.9
1101	13.2	23.9	14.0
1102	13.3	24.2	14.2
1103	13.5	24.4	14.3
1104	13.6	24.7	14.4
1105	13.7	25.0	14.5
1106	13.8	25.2	14.6
1107	13.9	25.5	14.7
1108	14.0	25.8	14.8
1109	14.2	26.0	15.0
1110	14.3	26.3	15.1
1111	14.4	26.6	15.2
1112	14.5	26.8	15.3
1113	14.6	27.1	15.4
1114	14.7	27.4	15.5
1115	14.8	27.6	15.6
1116	15.0	27.9	15.7
1117	15.1	28.2	15.9
1118	15.2	28.4	
1119	15.3	28.7	
1120	15.4	29.0	
1121	15.5	29.2	
1122	15.6	29.5	
1123	15.7	29.8	
1124	15.9	30.0	
1125	16.0	30.3	
1126	16.1	30.6	
1127	16.2	30.8	
1128	16.3	31.1	
1129	16.5	31.4	
1130	16.6	31.6	
1131	16.7	31.9	
1132	16.8	32.2	
1133	16.9	32.4	
1134	17.0	42.7	
1135	17.2	33.0	
1136	17.3	33.2	
1137	17.4	33.5	
1138	17.5	33.8	
1139	17.6	34.0	
1140	17.7	34.3	
1141	17.8	34.6	
1142	17.9	34.8	
1143	18.0	35.1	
1144	18.1	35.4	
1145	18.2	35.6	
1146	18.4	35.9	
1147	18.5	36.2	
1148	18.6	36.4	
1149	18.7	36.7	
1150	18.8	37.0	

TABLE VIII.

DISTRICT MEAN ANNUAL TEMPERATURE AND RAINFALL.

On the authority of R. L. J. Ellery, Esq., C.M.G., F.R.S.,
Government Astronomer.

March, 1892, to March, 1893.		Rainfall for Twelve Months.	Mean Annual Rainfall.	Mean Annual Tem- perature.
Name of Stations.		Inches.	Inches.	Degrees.
Barnawartha District	{ Retreat Vineyard	-	24.39	} 59.3
	{ Hermitage, The	-	20.19	
	Beechworth -	-	31.88	56.9
	Echuca -	-	17.66	59.6
	Lilydale -	-	35.07	57.7
	Nagambie -	-	23.30	58.4
	Rutherglen -	-	22.00	60.0
Yering District	{ Yering Town	-	28.94	} 57.8
	{ St. Hubert's Vineyard	-	31.61	
	Yackandandah -	-	37.92	59.1

March, 1893, to March, 1894.		Rainfall for Twelve Months.	Mean Annual Rainfall.		Mean Annual Tem- perature.
Name of Stations.		Inches.	Inches.	No. of Years.	Degrees.
Barnawartha District	{ Retreat Vineyard	33.90	27.47	8	} 59.3
	{ Hermitage, The	28.87	22.78	8	
	Beechworth -	46.83	32.17	22	56.1
	Echuca -	19.18	18.16	15	60.3
	Lilydale -	35.21	36.25	8	57.7
	Nagambie -	26.87	26.72	7	58.4
	Rutherglen -	28.55	24.70	10	60.0
Yering District	{ Yering Town	-	33.55	10	} 57.8
	{ St. Hubert's Vin.	-	31.14	3	
	Yackandandah -	48.80	42.26	7	59.1
	Dookie -	27.86	22.36	14	60.6
	Wahgunyah -	26.73	22.04	21	60.3
	Great Western -	-	23.73	2	68.7